

Mr David Calvert
A/g Assistant Secretary
Environment Assessment Branch
Department of the Environment and Energy
Canberra, ACT

Our Reference: 13715 Date: 10 November 2020

# RE: EPBC 2009/4821 – Year 6 Monitoring Draft Report (June 2020) for Wotonga Offset Area Management Plan – Millennium Mine Expansion Project

Ecology and Heritage Partners Pty Ltd have been engaged by Peabody Energy Australia (Peabody) to implement the management and monitoring requirements for their environmental offset area that has been established on the 'Wotonga Pastoral Holding' property, north-east of Moranbah in central Queensland. The offset area was established to comply with conditions of approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (EPBC 2009/4821) (Appendix 1). This letter has been prepared to demonstrate compliance with the monitoring requirements for Year 6 as described in section 4 of the Wotonga Offset Area Management Plan (Ecofund 2013). Offset area details are provided in Appendix 2.

The offset area consists of an active management area (containing regional ecosystem 11.9.5 *Acacia harpophylla* and/or *Casuarina cristata* open forest on fine-grained sedimentary rocks) and a passive management area (comprising the adjoining scarps and associated vegetation).

#### 1 Visual Monitoring

The status of the offset area was based on visual inspection that was completed on 15 June 2020, by Jared McGuiness (Consultant Botanist) and Jordan Whitmore (Consultant Botanist) of Ecology and Heritage Partners and was conducted at the beginning of the dry season.

This section includes the findings from the visual monitoring and implications for management.

#### 1.1 Perimeter fencing and gates

The offsets area (combined active and passive management areas) is fully fenced. The fences are a three-strand barb-wire type and are generally in good condition.

Where the fence crosses Brook Creek, additional sections have been included to prevent cattle entering the area. Gates are located at the north-western, south-eastern and south-western corners of the offset area and are in good condition. A gate in the north-western corner was open at the time of the assessment, with cattle observed within the site and tracks and scats present throughout the site (Plate 1 and 2).

ADELAIDE 22 Greenhill Rd Wayville SA 5034









Plate 2 — Cattle tracks observed within the offset area (Ecology and Heritage Partners Pty Ltd 15/06/2020)

#### 1.1.1 Further actions

No fences or gate repairs are required. General fence maintenance is provided by Mr. Greg Smith (Agistee – Wotonga Pastoral Holdings). Gates should remain closed to exclude stock from the offset site.

#### 1.2 Noxious and environmental weeds

The primary weed threat within the offset area is Buffel Grass *Cenchrus ciliaris*. There are also scattered occurrences of Velvety Tree Pear *Opuntia tomentosa* and Harrisia Cactus *Harrisia martinii*. Velvety Tree Pear and Harrisia Cactus are restricted invasive plants under the Queensland *Biosecurity Act 2014* and Velvety Tree Pear is a Weed of National Significance (WoNS). The extent of Velvety Tree Pear within the offset area was observed to have decreased from previous field assessments and a significant reduction in the number of large Velvety Tree Pear specimens was recorded however, scattered occurrences of the previously mentioned cactus species still occur within the offset area (Plate 3).

Buffel Grass is established within the offset area, although varies in extent and density depending upon the age and structure of the Brigalow regrowth. The species occurs in discrete patches and as isolated individuals across the offset area.

While the site was being grazed by cattle at the time of the monitoring, and the preceding months two months lacked significant rainfall, Buffel Grass was at slightly higher densities than observed in the previous monitoring survey (Plate 4). However, it is likely that this will slightly decrease during the dry season ahead.

Native grasses were observed to be locally abundant in places, particularly in the less disturbed areas along the base of the ridgeline (Plate 5). Commonly occurring native species observed included Black Spear grass Heteropogon contortus, White Spear grass Aristida leptopoda, Many-headed Wiregrass Aristida caputmedusae, Kangaroo Grass Themeda triandra and Slender Chloris Chloris divaricata. Other native shrubs and ground covers observed included Currant Bush Carissa ovata, Roly-poly Salsola australis, Ruby Saltbush Enchylaena tomentosa and Spiked Sida Sida hackettiana.



Targeted weed control activities have not been undertaken, although limited grazing has occurred within the active management area.

#### 1.2.1 Further actions

The extent and density of Buffel Grass currently does not warrant the use of cattle for control given that cattle are unlikely to exclusively graze on Buffel Grass and the potential exacerbation of soil erosion from trampling. The use of targeted herbicide application was considered to control exotic grasses. However, the small areas of infestation and dispersed nature throughout the offset area does not warrant chemical control at this time. A combined method of chipping and burning should be used to treat small areas of infestation currently within the offset area. Mature tussocks of Buffel Grass should be hand chipped out, the roots exposed, piled in situ and burnt. The burning will stimulate seed to grow requiring further post-burning follow up treatment.

It is recommended that all cactus species including Velvety Tree Pear continued to be treated within the site as it presents a risk to the ecological integrity of the offset area, further weed control of additional noxious and environmental weed species should be conducted monthly by suitably qualified contractor.



**Plate 3** – Velvety Tree Pear within the offset area (Ecology and Heritage Partners Pty Ltd 15/06/2020)







**Plate 4** – Buffel Grass within the offset area (Ecology and Heritage Partners Pty Ltd 15/06/2020)

Plate 5 – Dense native grass cover within the offset area (Ecology and Heritage Partners Pty Ltd 15/06/2020)

#### 1.3 Erosion and areas with high erosion potential

Areas of erosion remain across the site with minor change since the previous monitoring event. The soils present within the offset site are highly susceptible to erosion, which has come about through past management of the area including cattle grazing and land clearing in conjunction with high rainfall events and wind.

A large area of scalding erosion is present in the centre of the active offset area adjacent to Brook Creek. Scalding occurs when wind and water erosion removes the topsoil and exposes the saline sodic soils, also limiting water infiltration into the soil. In the past these areas were likely to be sparsely vegetated and grazed by cattle, leading to gradual erosion over time and exacerbated by high rainfall events. The low nutrient and high saline nature of the soil then makes it difficult for vegetation to recolonise the area. Other areas of the site are affected by sheet and rill erosion and gully erosion (Plate 6 and 7).

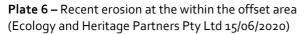
High intensity remediation techniques may be available for this erosion, although these are often not economically viable. Seriously degraded areas are likely to improve gradually over time with the exclusion of grazing livestock.

#### 1.3.1 Further actions

Erosion control activities have not been undertaken to date and are not currently planned to occur. Removal of livestock will lead to slow improvement of scalded areas, while gully reshaping/filling, and re-seeding may be considered in the future if these areas show signs of further degradation. Additional measures may include the placement of dead timbers or rocks within areas of severe erosion to reduce water velocity, a practice commonly known as a gully plug. Further field assessments will determine the need for erosion control measures.









**Plate 7 –** Gully erosion within the offset area (Ecology and Heritage Partners Pty Ltd 15/06/2020)

#### 1.4 Bushfire fuel loads

During the preceding wet season and early stages of the dry season, a combined total of 268.6 mm was recorded from January 1 2019 to June 21 2019 (Moranbah Airport – Bureau of Meteorology). Following the high rainfall period between January and March (229.8 mm), a total of 68.6 mm of rainfall has been recorded in the preceding three months to the survey. This has resulted in minor grass dieback (particularly Buffel Grass) and increased dry litter and woody debris. The bushfire fuel load is currently moderate-high, although is expected to decrease slightly as biomass is reduced due to dieback during the upcoming dry season.

The offset area is relatively sheltered from bushfire attack to the north, east and south from the surrounding escarpment. Bushfire is therefore likely to come from vegetated areas to the west. There is a firebreak along the western boundary of up 60 metres in width, which provides protection from bushfire attack from this direction.

#### 1.4.1 Further actions

No further actions required at this time.

#### 1.5 Damage/degradation from pest animal populations

The primary pest animal threat within the offset area is Wild Dogs / Dingoes *Canis lupus / C. I. dingo* and Rabbits *Oryctolagus cuniculus*. Wild Pigs *Sus scrofa* are also present, but at much lower densities. Wild Pigs were observed during the current assessment and evidence of rabbits (scats) and Wild Dogs/Dingoes was observed within the offset area.

Due to the low number of scat sites and warrens observed and taking into account the total size of the offset area, it is considered that rabbits are not a widespread issue. In the areas they are localised, Rabbits may have adverse impacts on grass cover and soil erosion. However, it is highly unlikely that Rabbits are making a significant contribution to the erosion described in Section 1.3 and their impacts are considered to be negligible.



Targeted pest animal control activities have not been conducted on the offset area to date. Mr. Smith has previously undertaken opportunistic shooting of wild dogs and pigs within the surrounding area; however specific numbers are not available.

#### 1.5.1 Further actions

Shooting of the pest species (i.e. rabbits, wild dogs and pigs) should continue.

#### 1.6 Success of revegetation works

Active revegetation activities have not been undertaken to date and are not currently planned to occur. The limited presence of cattle within the offset area has allowed natural regeneration to continue throughout the active management area in the absence of grazing pressures. Native grass cover appears to be generally increasing, particularly throughout the dry season when Buffel Grass cover is reduced.

#### 1.6.1 Further actions

No further actions required at this time.

#### 1.7 Groundcover and signs of land degradation during pulse grazing

Signs of cattle were observed within the offset area during the monitoring inspection, including tracks and scats. Impacts of cattle grazing was most noticeable in areas dominated by Buffel Grass.

#### 1.7.1 Further actions

As per section 1.2, pulse grazing is not recommended at this time to reduce the cover of Buffel Grass. The requirement to exclude cattle from the offset site should be communicated with the landowner/ land manager.

#### 2 Field Component of Ecological Equivalence Monitoring

The ecological equivalence monitoring (i.e. BioCondition assessments) of permanent monitoring sites was completed in August 2015 and completed again in August 2017. The BioCondition assessment was completed during this monitoring period (June 2020) was originally scheduled for the first quarter of 2020 as the monitoring period for August 2019 was missed; however, this assessment was delayed due to COVID-19 border restrictions. The next BioCondition assessment is scheduled to be completed in the next monitoring period (November 2020), however this assessment has been delayed due to ongoing COVID-19 border restrictions.

BioCondition sites were established in the locations denoted within the Offset Area Management Plan and assessed according to the methodology within the assessment manual for BioCondition Sites in Queensland (Eyre et al. 2015). The BioCondition scores are presented below (Table 1). The BioCondition scores are between 0 and 1, where a score of 0 means that the vegetation does not resemble the condition of the undisturbed vegetation used as a benchmark, and a score of 1 means that the vegetation meets the benchmark vegetation condition.



The BioCondition monitoring in undertaken in 2015 returned a score of 0.535 for both sites. The 2017 monitoring showed gradual improvements in condition, with scores increasing in site 1 and 2 to 0.565 and 0.585 respectively. While undertaken at a different time of year, the June 2020 monitoring showed the condition of site 1 and site 2 have continued to improve (Table 1). The increase in BioCondition scores indicate that the vegetation within the offset area is well on track to attaining a similar condition of the benchmark community. Specifically, the offset area shows:

- Presence of dominant canopy species and recruitment of canopy species;
- Presence of fallen woody debris and a high proportion of debris in an advanced state of decay;
- A low percentage of weed cover (e.g. Buffel Grass comprised less than 20% of ground cover); and,
- A higher percentage of native perennial grass cover.

**Table 1** Comparison BioCondition Scores for Brigalow.

BioCondition Site	Datum / Zone	Easting	Northing	Score	Assessment date	
August 2015						
1	GDA94 / MGA Zone 55	624056	7589662	0.535	26/8/2015	
2		625036	7589915	0.535	26/8/2015	
August 2017						
1	GDA94 / MGA Zone 55	624056	7589662	0.565	22/8/2017	
2		625036	7589915	0.585	22/8/2017	
June 2020						
1	GDA94 / MGA Zone 55	624056	7589662	0.615	15/6/2020	
2		625036	7589915	0.605	15/6/2020	

### 3 Permanent Photo-monitoring Sites

Photo monitoring points were established within the offset area. Sample photos from each point are shown in Appendix 3 and the locations shown in Table 2 and in Figure 1.

**Table 2** Coordinates for Photo-monitoring Points.

Photo-monitoring Point	Easting	Easting
PM01	624951	7590122
PM02	624779	7590533
PM03	624576	7590371
PM04	624278	7589864



Photo-monitoring Point	Easting	Easting
PM05	624292	7589503
PM06	624293	7589194
PM07	623720	7589438

Coordinates are in datum GDA94, MGA Zone 55 projection

#### 4 Summary

An inspection of the offset area was undertaken on 15 June 2020 for the purposes of visual monitoring according to Section 4 of the Wotonga Offset Area Management Plan.

As the assessment was undertaken early in the dry season, native grass cover was high in less disturbed, wooded areas, while weed cover mainly dominated disturbed areas (from past erosion and limited cattle incursion into the offset area). While erosion is still prevalent within the offset area, the absence of grazing pressure will lead to gradual improvement, areas at the head of several gullies were identified during the assessment to contain small (less than five meters squared) areas of recent erosion activity. These areas will be reassessed during the next field assessment, and if necessary, the appropriate erosion mitigation measures recommended. Disturbance from cattle can be reduced or eliminated through increased gate security and pest fauna impact to ecological values within the offset site is minimal. The increase in BioCondition scores indicate that the vegetation within the offset area is on track to attaining a similar condition of the benchmark community.

While the fuel load is currently moderate-high this is expected to decrease as biomass reduces due to dieback in the dry season.

Yours sincerely,

Jared McGuiness Consultant Botanist

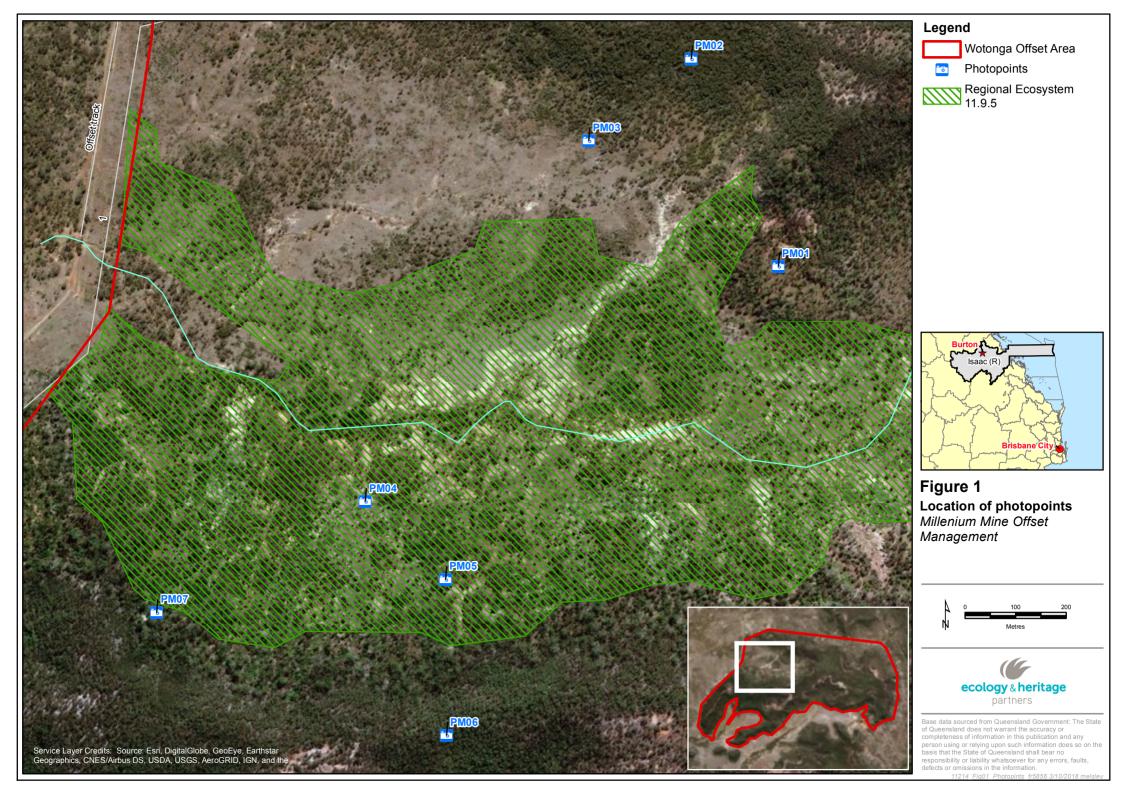
Ecology and Heritage Partners Pty Ltd



#### References

Ecofund. 2013. *Wotonga Offset Area Management Plan – Millennium Expansion Project*. A report prepared for Peabody Energy Australia Pty Ltd.

Eyre, T.J., Kelly, A.L, Neldner, V.J., Wilson, B.A., Ferguson, D.J., Laidlaw, M.J. and Franks, A.J. 2015. *BioCondition: A Condition Assessment Framework for Terrestrial Biodiversity in Queensland. Assessment Manual.* Version 2.2. Queensland Herbarium, Department of Science, Information Technology, Innovation and Arts, Brisbane.





# Appendix 1 – Conditions of Approval under the EPBC Act

### Approval

#### Millennium Expansion Project - EPBC No 2009/4821

This decision is made under sections 130(1) and 133 of the Environment Protection and Biodiversity Conservation Act 1999.

#### Proposed action

person to whom the approval is granted

Peabody Energy Australia Pty Ltd

proponent's ACN (if applicable)

93 096 909 410

proposed action

To extend the current open cut mining operation on the existing ML 70313 and additionally into two adjoining leases Mining Lease Application MLA 70401 "North Poitrel" and Mineral Development Licence MDL 136 "Mavis Downs", 22km east of Moranbah and 16km south west of Coppabella in central Queensland as described in the referral received 27 March 2009 and the Millennium Expansion Project Environment Impact Statement dated December 2010 (see EPBC Act Referral 2009/4821).

#### Approval decision

Controlling Provision	Decision
Listed threatened species and communities (sections 18 & 18A)	Approved

#### conditions of approval

This approval is subject to the conditions specified below.

#### expiry date of approval

This approval has effect until 28 October 2031.

Decision-maker

name and position

**David Calvert** 

A/g Assistant Secretary

**Environment Assessment Branch** 

signature

date of decision

3 NOVEMBER 2011

#### Conditions attached to the approval

1. To offset the impact to the Brigalow (Acacia harpophylla dominant and co-dominant) ecological community, the person taking the action must register a legally binding conservation mechanism (such as a Nature Refuge Agreement) over a minimum of 112.5 hectares of the Brigalow (Acacia harpophylla dominant and co-dominant) ecological community (the offset area) as identified in the offset management plan referred to in condition 2. The mechanism/s must provide enduring protection for protection for the offset area and be registered within 2 years of the date of this approval.

The conditions of the conservation mechanism must ensure that management actions are undertaken for the protection and enhancement of the Brigalow (*Acacia harpophylla* dominant and co-dominant) ecological community. The person taking the action must obtain agreement from any third parties responsible for management actions and provide details of the responsible parties, including their position or status as a separate contractor, to the **department**.

To offset the impacts to the Brigalow (Acacia harpophylla dominant and co-dominant) ecological community, the person taking the action must submit to the Minister for approval an Offset Management Plan within 12 months of the date of this approval.

This Offset Management Plan must include, at a minimum, the following information:

- a. the desired outcomes/objectives of implementing the plan;
- details of Brigalow (Acacia harpophylla dominant and co-dominant)
  endangered ecological community offset areas, including a textual description
  and map to clearly define the location and boundaries of the offset area. This
  must be accompanied with the offset attributes and a shapefile;
- details of management actions to protect and enhance the extent and condition of the threatened species habitat values including rehabilitation, weed control, fire management, erosion and sediment control, management of livestock and restrictions on access, within the offset area;
- d. the timing, responsibilities and performance criteria for such actions;
- a monitoring plan including ecological surveys that must be undertaken to assess the success of the management measures against identified milestones and objectives;
- f. a process to report, to the **department**, the management actions undertaken in the offset areas and the outcome of those actions, including identifying any need for improved management;
- a description of the potential risks to successful management and rehabilitation in the offset areas, and a description of the contingency measures that would be implemented to mitigate these risks; and,
- details of parties responsible for monitoring, reviewing and implementing the plan.

The Offset Management Plan must be implemented.

- Before impacting or removing any EPBC listed ecological community or species, the
  person taking the action must provide to the **Minister** a Threatened Flora and Fauna
  Species and Ecological Communities Management Plan. The Plan must contain, but
  is not limited to, the following:
  - a. Management actions relating to EPBC listed species; and
  - Mitigation actions relating to EPBC listed species.

The Threatened Flora and Fauna Species and Ecological Communities Management Plan must be implemented. This plan may be made publicly available on the internet by the **department**.

Note: Condition 8 provides that, if the **Minister** believes that it is necessary or desirable for the better protection of the environment, the **Minister** may require the person taking the action to make, within a period specified by the **Minister**, revisions to a plan required under these conditions.

- Within 14 days from the commencement of construction, the person taking the action must advise the department in writing of the actual date of commencement of construction.
- 5. Within three months of every 12 month anniversary of the commencement of construction, the person taking the action must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of any management plans as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the department at the same time as the compliance report is published.
- 6. Upon the direction of the Minister, the person taking the action must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the Minister. The independent auditor must be approved by the Minister prior to the commencement of the audit. Audit criteria must be agreed to by the Minister and the audit report must address the criteria to the satisfaction of the Minister.
- 7. If the person taking the action wishes to carry out any activity otherwise than in accordance with the Plans referred to in conditions 2 and 3, as specified in the conditions, the person taking the action must submit to the **department** for the **Minister**'s written approval a revised version of that plan. The varied activity shall not commence until the **Minister** has approved the revised plan in writing. If the **Minister** approves the revised plan, that plan must be implemented in place of the plan originally approved.
- 8. If the Minister believes that it is necessary or convenient for the better protection of listed threatened species and communities to do so, the Minister may request that the person taking the action make specified revisions to plans specified in the conditions and submit the revised plan for the Minister's written approval. The person taking the action must comply with any such request. The revised plan must be implemented. Unless the Minister has approved the revised plan then the person taking the action must continue to implement the original plan.
- 9. If, at any time after 5 years from the date of this approval, the person taking the action has not substantially commenced the action, then the person taking the action must not substantially commence the action without the written agreement of the Minister.
- 10. The person taking the action must maintain accurate records substantiating all activities and outcomes associated with or relevant to the above conditions of approval, including measures taken to implement the management plans required by this approval, and make them available upon request to the **department**.
  - Such records may be subject to audit by the **department** or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the **department**'s website. The results of audits may also be publicised through the general media.

**Note:** To avoid doubt, if a condition of a State (QLD) approval held by the proponent requires a plan relating to EPBC-listed species the proponent may simultaneously meet the relevant requirements of these conditions by submitting a single plan.

Note: Condition 8 provides that, if the **Minister** believes that it is necessary or desirable for the better protection of the environment, the **Minister** may require the person taking the action to make, within a period specified by the **Minister**, revisions to a plan required under these conditions.

- Within 14 days from the commencement of construction, the person taking the action must advise the department in writing of the actual date of commencement of construction.
- 5. Within three months of every 12 month anniversary of the commencement of construction, the person taking the action must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of any management plans as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the department at the same time as the compliance report is published.
- 6. Upon the direction of the Minister, the person taking the action must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the Minister. The independent auditor must be approved by the Minister prior to the commencement of the audit. Audit criteria must be agreed to by the Minister and the audit report must address the criteria to the satisfaction of the Minister.
- 7. If the person taking the action wishes to carry out any activity otherwise than in accordance with the Plans referred to in conditions 2 and 3, as specified in the conditions, the person taking the action must submit to the **department** for the **Minister**'s written approval a revised version of that plan. The varied activity shall not commence until the **Minister** has approved the revised plan in writing. If the **Minister** approves the revised plan, that plan must be implemented in place of the plan originally approved.
- 8. If the Minister believes that it is necessary or convenient for the better protection of listed threatened species and communities to do so, the Minister may request that the person taking the action make specified revisions to plans specified in the conditions and submit the revised plan for the Minister's written approval. The person taking the action must comply with any such request. The revised plan must be implemented. Unless the Minister has approved the revised plan then the person taking the action must continue to implement the original plan.
- 9. If, at any time after 5 years from the date of this approval, the person taking the action has not substantially commenced the action, then the person taking the action must not substantially commence the action without the written agreement of the Minister.
- 10. The person taking the action must maintain accurate records substantiating all activities and outcomes associated with or relevant to the above conditions of approval, including measures taken to implement the management plans required by this approval, and make them available upon request to the **department**.
  - Such records may be subject to audit by the **department** or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the **department**'s website. The results of audits may also be publicised through the general media.

**Note:** To avoid doubt, if a condition of a State (QLD) approval held by the proponent requires a plan relating to EPBC-listed species the proponent may simultaneously meet the relevant requirements of these conditions by submitting a single plan.

#### Definitions

**Department** - the Australian Government Department responsible for the *Environment Protection and Biodiversity Conservation Act 1999*.

**Minister** - the Minister administering the *Environment Protection and Biodiversity Conservation Act 1999.* 

Shapefile -means an ESRI Shapefile containing '.shp', '.shx' and '.dbf' files and other files capturing attributes of the Offset Area, including the shape, EPBC reference ID number and EPBC protected matters present at the relevant site. Attributes should also be captured in '.xls' format.

Offset attributes -mean an '.xls' file capturing relevant attributes of the Offset Area, including the EPBC reference ID number, the physical address of the offset site, coordinates of the boundary points in decimal degrees, the EPBC protected matters that the offset compensates for, any additional EPBC protected matters that are benefiting from the offset, and the size of the offset in hectares.

Commencement of construction- means any preparatory works required to be undertaken including clearing vegetation, the erection of any onsite temporary structures and the use of heavy duty equipment for the purpose of breaking the ground for mining, buildings or infrastructure.



# Appendix 2 — Wotonga offset details

### **Departmental Reference Details**

Reference and Assessment Details		
Queensland Departmental Reference No: MIN10034430	Queensland Offset ID: TBA	
Property Address: Wotonga Pastoral Holding, Ellensfield Road, Burton, Queensland		
Real property description: Lot 13 on SP178466		
Tenure: Leasehold	Primary local government area: Isaac Regional Council	

#### **Offset Area Details**

Landholder Details		
Registered Lot on Plan: Lot 13 on SP178466		
Registered Owner/s on Title: State of Queensland		
Lessee: Wotonga Pastoral Pty Ltd  Trustee: N/A		
Business/Company name (ABN/CAN): Peabody (Burton Coal) Pty Ltd (formerly Wotonga Pastoral Pty Ltd) (ACN: 077 679 513)		
Phone number: +61 (7) 3239 7279	Mobile Phone: +61 (4) 488 224 546	
Fax number: +61 (7) 3229 1776	Contact person: John O'Brien	
Email: jobrien2@peabodyenergy.com		
Postal address: GPO Box 1025, Brisbane QLD 4001		



# Appendix 3 – Photo monitoring



Plate 1a – Photo-monitoring point 1 (PM01) looking north (regional ecosystem 11.7.3) – August 2015





Plate 1b – PM01, April 2016



Plate 1c – PM01, August 2016



Plate 1d – PM01, May 2017

Plate 1e – PM01, August 2017



Plate 1f – PM01, June 2018









Plate 1g – PM01, September 2018

Plate 1h – PM01, June 2019

Plate 1i – PM01, June 2020





Plate 2a – Photo-monitoring point 2 (PM02) looking north (RE 11.7.2) – August 2015



Plate 2b-PM02, April 2016



Plate 2c – PM02, August 2016



Plate 2d – PM02, May 2017



Plate 2e – PM02, August 2017



Plate 2f – PM02, June 2018









Plate 2g – PM02, September 2018

Plate 2h – PM02, June 2019

Plate 2i – PM02, June 2020





Plate 3a – Photo-monitoring point 3 (PMO3) looking north (RE 11.7.3) – August 2015



Plate 3b – PM03, April 2016



Plate 3d – PM03, May 2017 Plate 3e – PM03, August 2017



Plate 3c – PM03, August 2016



Plate 3f – PM03, June 2018









Plate 3g – PM03, September 2018

Plate 3h – PM03, June 2019

Plate 3i – PM03, June 2020





Plate 4a – Photo-monitoring point 4 (PM04) looking north (erosion) – August 2015



Plate 4b – PM04 - April 2016 showing slightly different angle.



Plate 4c – PM04, August 2016



Plate 4d – PM04, May 2017



Plate 4e – PM04, August 2017



Plate 4f – PM04, June 2018









Plate 4g – PM04, September 2018

Plate 4h – PM04, June 2019

Plate 4i – PM04, June 2020





Plate 5a – Photo-monitoring point 5 (PM05) looking north (RE 11.9.5) – August 2015





Plate 5d – PM05, May 2017 Plate 5e – PM05, August 2017



Plate 5c – PM05, August 2016



Plate 5f – PM05, June 2018









Plate 5g – PM05, September 2018

Plate 5h – PM05, June 2019

Plate 5i – PM05, June 2020





Plate 6a – Photo-monitoring point 6 (PM06) looking north (RE 11.7.2) – August 2015



Plate 6b – PM06, April 2016



Plate 6d – PM06, May 2017 Plate 6e – PM06, August 2017



Plate 6c – PM06, August 2016



Plate 6f – PM06, June 2018









Plate 6g – PM06, September 2018

Plate 6h – PM06, June 2019

Plate 6i – PM06, June 2020





Plate 7a – Photo-monitoring point 7 (PM07) looking north (RE 11.5.3a) – August 2015



Plate 7b – PM07, April 2016



Plate 7c – PM07, August 2016



Plate 7d – PM07, May 2017



Plate 7e – PM07,August 2017



Plate 7f – PM07, June 2018









Plate 7g – PM07, September 2018

Plate 7h – PM07, June 2019

Plate 7i – PM07, June 2020